TRANSACTIONS OF THE PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, February 4, 1895.

The President, THOMAS G. MORTON, M.D., in the Chair.

CALCULUS IMPACTED IN THE URETHRA, CAUSING GANGRENE AND RUPTURE OF THE URETHRA.

DR. THOMAS G. MORTON presented a well-grown youth, aged sixteen years, who was admitted into the Pennsylvania Hospital, January 2, 1895, with the following history:

The patient had had irritability of the bladder, and frequent desire to urinate, with occasional stoppages of the flow while urinating. On December 23, after such an experience, the interruption became permanent. On the 26th, as he was in great distress, he consulted a physician, who found a stone impacted in the penile urethra, about two and a half inches from the meatus. In efforts at extraction the stone crumbled to pieces, but it was removed, and the patient states that he then passed about a cupful of blood, but did not empty his bladder. A few hours after the operation the penis and scrotum swelled, forming a tumor which became dark-colored in patches. There was absolute retention of urine. His general condition becoming serious, he was brought to the hospital on the ninth day after impaction had occurred.

When admitted into the hospital he was exceedingly feeble and had septic fever. The penis and scrotum were œdematous and enormously swollen, assuming the form of a dense globular tumor, the size of a large orange; the skin of the penis and scrotum was gangrenous. The bladder was distended to its full extent, and the tumor was the result of extravasation consequent upon rupture of the urethra due to gangrene.

An incision was made in the median line, extending from the penis, through the scrotum, to the perineum, and a large collection

of urine was discovered, which formed the tumor. The incision divided the scrotum in the middle and exposed the urethra, which was gangrenous to the extent of about two inches; the spot where it had ruptured was in front of the scrotum, evidently where the stone had lodged. The perineal urethra was then opened and the bladder evacuated. A drainage-tube was slipped into the bladder from the wound, and a tube was also passed from the meatus. After two weeks both the drainage-tubes were removed. The further progress of the case to recovery was uneventful. The patient, when presented, a month after the operation, had the wound in a healing condition, with the large urethral fistula still open.

Dr. Morton said that he presented the case partly on account of the unusual character of the accident, but more especially in regard to the length of time, nine days, absolute retention existed without bladder rupture.

In regard to the closure of the fistula, it would seem prudent to wait until the repair now progressing shall show what form of operation may be required.

Dr. John H. Packard thought that the thing to do was to make a perineal section in the membranous portion of the urethra, and keep the anterior portion completely at rest. When repair had gone as far as it would, then an after-operation could be considered.

Dr. Willard said that the case reminded him of one he saw fifteen or twenty years before. The man, after gonorrhœa, had a stricture, and was in the habit of catheterizing himself. One day urination ceased and retention occurred, as he thought, from the stricture. Dr. Willard first saw him on the fourth day of this condition. At this time the scrotum was gangrenous. The whole anterior portion sloughed off and both testicles were bare. Rupture of the urethra had occurred in the prostatic portion, where a stone had lodged, blocking the urethra and causing gangrene. He treated the case by incision in the perineum and scrotum, removing the stones. The wound healed slowly, but without difficulty, and the man lived several years afterwards. The incision in that case was two or three inches in length, but did not extend as far forward as in Dr. Morton's case.

Dr. W. W. Keen remarked that the most interesting question here was as to the future restoration of the urethra. Two cases that occurred in his practice some years ago had some bearing upon this. One was a patient in the country, who received an injury of his peri-

neum as the result of jumping and coming down upon the sharp corner of a board, which penetrated the perineum to the depth of two or three inches to the prostate and completely lacerated the urethra. He was brought in from the country, and was seen by Dr. Keen on the third day. No urine had been passed. Attempts to make a perineal section were unsuccessful, since the tissues were sloughing and there was such profuse bleeding that the tissues could not be recognized. He therefore opened the bladder above the pubes, and performed retrograde catheterization. A silver catheter was introduced and kept in the urethra for six weeks; the granulation tissue grew around the catheter and restored the urethra completely. Subsequently, by gradual dilatation, the calibre was increased to No. 30, and kept at this by occasional dilatation, by the sound.

The second case occurred two years ago last summer. A man, in vaulting on his bicycle, missed his aim and landed upon his wheel. He ruptured his urethra without breaking the skin. There was complete retention; a perineal section was done, but only after a long search did he succeed in finding the urethra. A catheter was left in for several weeks and resulted in the re-establishing of the calibre of the urethra as in the former patient. It is possible that the same thing might be done in the case of Dr. Morton. If the silver catheter is left in place the granulation-tissue might spring up around it and obviate the necessity of a plastic operation. At all events, it would make a subsequent operation less extensive.

DR. PACKARD said that about fifteen years ago a boy was brought into the Pennsylvania Hospital, who had fallen across a board and caused rupture of the urethra very close to the bladder. In that case there was no sloughing, simply a rupture at the neck of the bladder, just within the sphincter. Attempts had been made to pass the catheter, but without success. Attempts by perineal section to find the vesical extremity of the urethra were unsuccessful. He then performed suprapubic section and retrograde catheterization. He then succeeded in passing a soft instrument through from the penis, and had no further trouble thereafter, and the patient made a good recovery.

DR. HENRY R. WHARTON recalled having seen four cases of impacted urethral calculus. The first was a boy, four or five years of age, under the care of Dr. Lenox Hodge at the Children's Hospital. He was brought in several days after impaction occurred, and sloughing and urinary infiltration existed. He died in the course of a few

days after operation, and it was found at the autopsy that he had typical surgical kidneys. The next case was a child, five or six years of age, a patient of Dr. Samuel Ashhurst. The impaction had only existed for twenty-four hours, and there was no gangrene and no rupture of the urethra. It was found impossible to remove the calculus through the meatus, and an incision was made just behind the stone, and it was taken out. A couple of stitches were used to bring the wound together, but they did not hold well, and the wound healed eventually by granulation. The next case was a man who was brought into the Presbyterian Hospital with retention of urine for twenty-four hours. He had a stone in the urethra at the peno-scrotal junction. He succeeded in grasping the stone with forceps introduced into the urethra, and removed the calculus without difficulty. The patient recovered. The last case was one seen with Dr. Dick. It was a boy four years of age. Retention of urine had existed for twenty-four hours, but he finally passed the stone without operative help, and there was no further trouble. In all the cases seen by him the impaction had occurred at the junction of the penis with the scrotum, which seems a favorite place for the stone to be arrested in its passage.

AMPUTATION OF THE ENTIRE UPPER EXTREMITY (INCLUDING THE CLAVICLE AND SCAPULA) FOR SARCOMA FOLLOWING FRACTURE OF THE CLAVICLE.

DR. W. W. KEEN related the following case: E. S., aged twenty-one years, in May, 1893, broke his left collar-bone by a fall. In June, 1894, a tumor appeared at this point, which, together with one and a half inches of the clavicle, was soon afterwards removed by Dr. Stout, of California. The tumor, however, immediately reappeared, and continued to grow rapidly until he came under the care of Dr. Keen in December, 1894. For the previous month he had been under the care of Dr. Coley, of New York, for treatment by the erysipelas and prodigiosus toxines, but without obvious benefit. When seen there was a large tumor extending from the shoulder to the base of the neck and attached to both clavicle and scapula. It reached to within two inches of the inner end of the clavicle. It seemed to be still possibly operable, because it did not seem to be infiltrating but encapsulated. The tumor seemed to be very movable with the shoulder, and there was not the slightest œdema of the arm, indicat-

ing that the vessels, and especially the veins, were not yet involved. He and his family readily consented to operation. (Fig. 1.)

The tumor was ulcerated at two points, and the skin was brawny and thick. The conditions, therefore, were unfavorable to a thorough asepsis, but the parts were as thoroughly disinfected as possible. His plan was to make one incision at the inner border of the tumor with its centre at the clavicle, and another at a right angle along the line of the clavicle down to the bone, to dissect these flaps, and by drawing away the tumor to uncover as much of the clavicle as possible, removing as much of the inner end as might be, and then search for the vessels. If they could be easily ligated he would then proceed to

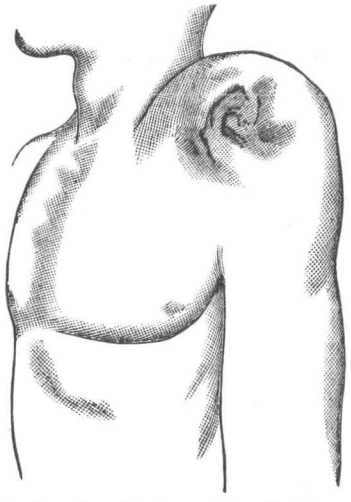

FIG. 1.—Sarcoma of shoulder from fracture of the clavicle. (From a photograph.)

remove the entire upper extremity. If, however, the vessels could not be reached, he would then close the wound and abandon the operation. His temperature was then 100° F. His pain was so severe and constant as to deprive him of much sleep. He was, however, generally in very fair health, though not strong. He was operated on at the Jefferson Medical College Hospital, December 26, 1894. The plan outlined above was carried out. Two and a half inches of the inner end of the clavicle were removed. He then sought for the vessels, and was so fortunate as to be able to dissect them loose and follow them down to the upper border of the pectoralis minor. At no point did he find the tissues under the great pec-

toral involved. In order to tie the vessels at so low a point he had gradually extended his vertical incision nearly to the axilla. It was evident that removing the tumor would remove so large a portion of the skin that it would be impossible to approximate the edges. Accordingly, he carried his incision down on the arm nearly to the elbow and dissected a flap of skin which was healthy from the inside of the arm, to be later turned upward so that the lowest end near the elbow would become the highest when in place on the neck. In dissecting the arm loose he removed the larger part of both the pectoral muscles. The posterior incision was now made, cutting as wide of the tumor as was possible, the incision passing nearly along the posterior border of the scapula. The separation of the extremity was now readily effected, and a moderate number of vessels ligated. After renewed disinfection of the large surface it was closed. The elbow flap was turned upward on the neck and enabled him to cover the entire raw surface by skin without any tension. As the skin of the inner side of the arm near the elbow derived its nourishment, not from the branches of the vessels from the axilla, but lower down from the arm, its transplantation was analogous to skin-grafting, and he regretted afterwards that he had not been very careful to dissect from its inner surface all the fatty tissue, of which only a little, however, was left. At four points he inserted between the stitches small portions of iodoform gauze to act as drains.

The patient was put in bed with apparently little shock, his temperature being 97.6° F., though the operation had lasted nearly two hours. His recovery was rapid and satisfactory, the temperature only rising once to over 100° F. On the sixth day he was out of bed. A small portion of the posterior edge of the flap from the arm sloughed. But for this he would have been entirely well within ten days.

Dr. Keen remarked that in amputations of the entire upper extremity, including the scapula and clavicle, and of the arm at the shoulder-joint, the key of the whole situation is very clearly the control of the hæmorrhage. In the present case operation had been declined by several surgeons on the ground that the disease was too extensive for a successful amputation. He was convinced, however, that the vessels were not yet invaded, because there was no œdema of the arm, and, also, on moving the tumor in various directions it seemed not to be so adherent as to prevent getting under it and obtaining access to the vessels. After resecting the clavicle and tearing through the tissues behind it, it was found possible to drag

the tumor outward, and thus gave an unexpectedly easy access to the vessels.

The branch of the brachial plexus of nerves going to the great pectoral was very easily seen and was a very good guide to the vessels. Each vessel was tied with two ligatures of silk, and the vessel divided between them. The amount of blood lost was not very great, and the shock of the patient was very moderate. He made a most gratifying, uninterrupted recovery.

Dr. Keen stated that this was the second operation of this character that he had done, in both the scar was about the same, although in the former case, a young lady, the tumor was not so large. There was very little shock in either case, although the operation lasted two hours. The first patient was out of bed in five days; the last patient was out of bed in six days. The shock was much less than would be expected from such an extensive dissection. The patient is now in good health. Figure 2 shows his present condition.

ON A MODIFICATION OF THE "INVAGINATION" METHOD OF OPERATING FOR THE RADICAL CURE OF HERNIA.

Dr. John H. Packard described a new plan by which he believed the hernial canal could be securely and permanently closed in a simple way.

He thought it to be possible to do away with the sac as such without any destruction of its tissues, not eliminating it or laying it open, but simply making use of it, converting part of it into a solid plug, and fastening it into the canal at its inner end, sacrificing nothing. Such invagination of the isolated sac is the essential principle of the procedure which he described.

He recalled a number of invagination methods that were in vogue many years ago. All these methods consisted in pushing up the sac along with a considerable amount of the surrounding tissue; and his belief is that to the want of isolation of the sac, and the consequent drag upon it, many failures in cases at first promising should be attributed.

Some successes were, however, attained. He himself had operated in 1863, by a method substantially that of Wützer, upon a young man who was desirous of entering the United States navy, but was prevented by the fact that he had a right inguino-scrotal hernia. He afterwards gained his appointment, and three years later was doing duty as a third assistant engineer, the rupture giving him no trouble.

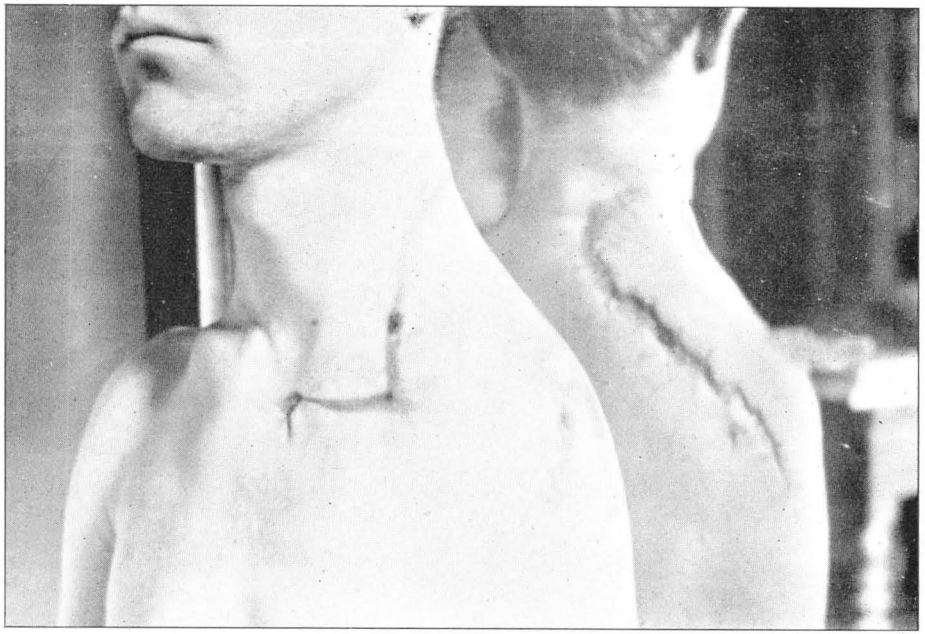

FIG. 2.—Resulting scar after amputation of the entire upper extremity. (The posterior part of the scar is shown in a mirror. Photographed by J. M. Bertolet.)

His present plan was to expose the hernia by a curved incision, describing a semicircular flap of ample size. The same incision could be used in operating for strangulated hernia, as it carries the cicatrix away from the seat of trouble, which is afterwards covered in by sound skin.

The sac, being laid bare, is isolated from the external ring down to its tip. Sometimes it is better to empty it during this process, which may often be accomplished by tearing with the fingers. Bassini's advice, to begin the isolation at the ring and to proceed downward, is generally to be followed.

In order to secure control of the empty sac he now passed a silk thread through its wall at either side; the two ends of each are left long, and caught in hæmostatic forceps.

With the forefinger of the left hand the tip of the sac is now inverted and pushed up as far as the internal ring, or as near it as possible.

Next a slightly-curved needle, with an eye near the point, and armed with a thoroughly-sterilized silk thread, is passed up along the finger as a guide, to be pushed out at one side of the tip through the tendon of the external oblique muscle. One end of the thread being caught, the needle is withdrawn slightly, and again pushed through the tendon at the other side of the tip. The other end of the silk thread is now detached from the needle, which is wholly withdrawn, and the two ends, left slack, are caught together in a hæmostatic forceps.

Now, by means of the two lateral threads, and by grasping in the fingers, the doubled sac is drawn down carefully, and with a small curved needle a fine silk suture is passed through it from side to side from below upward as far as possible, and then from above downward, so that its two ends, when drawn tight, will crumple up the sac into a solid mass. These ends are tied and cut off short.

The lateral threads are now removed, and the other silk thread is drawn up tight, pulling the plug formed of the sac into place at the internal ring; its two ends are tied on the outer surface of the tendon of the external oblique, and cut off short. The skin-flap is laid over in place again, the wound closed by sutures, and the ordinary antiseptic dressings applied.

Until the wound is completely healed the patient is kept in bed. He does not put a truss on any of the patients recently subjected to this operation, but cautions them against making any muscular effort likely to bring undue stress upon the parts until time enough has elapsed for their consolidation.

As to the ultimate results of this operation he has no cases of sufficient duration to enable him to speak positively. A man, aged twenty-two years, operated on October 24, was presented for examination; he does full work as an orderly at the Pennsylvania Hospital without either truss or discomfort. A boy, aged twelve years, was operated on December 12. In him there is no sign of yielding of the plug, though he is running about as heedlessly as any boy of his age. A man, aged forty-nine years, operated on at the same time, seems also to be completely relieved. On January 10 he operated on a man, aged fifty-four years, at St. Joseph's Hospital, who has since had a severe bronchitis, but his hernia seems entirely controlled, and he is now going about freely. Another man, aged thirty-two years, in the Pennsylvania Hospital, operated on January 7, is still under treatment.

He said that he was well aware that his array of cases was very small, but the first two above mentioned, and the fourth, afforded pretty severe tests of the efficiency of the closure of the canal. He offered the method as one which seemed to him sound in principle and promising well; moreover, in case of its failure, the parts are in condition for the repetition of this procedure or for the adoption of any other that may commend itself.

Of course, there must be an exercise of judgment as to the suitableness of any mode of operation in any given case. There would be difficulty in adopting the one now described in cases of congenital hernia; and whenever for any reason the sac must be extensively opened it would have to be carefully sutured before invaginating it. And he believed that it might not answer well if the canal and internal ring were very wide.

DR. KEEN said that the proposed method did not seem to him to secure the internal ring as well as a suture applied high up and within the internal ring, so as to close it, which he always did. In the second place there was nothing said about suturing the abdominal wall, and without an incision in the abdominal wall it is difficult to locate the internal ring accurately. If this is not closed, there will be left a tube beyond the bite of the ligature. There must also be an opening in the belly wall through which the spermatic cord passes, which is not narrowed in this operation, which would permit recurrence of the hernia. The case presented is too recent to permit any conclusion as to the ultimate result, and in the one of four years' standing the result is unknown. He took exception to Dr. Packard's statement that the Bassini or the Halsted operation is too difficult for

most general practitioners. It does require a good knowledge of anatomy, but unless a man is a good anatomist he should not operate for hernia.

DR. PACKARD rejoined, in reply to the first point, with regard to not closing the internal ring, that in many cases the internal ring is reached if the operator pushes his forefinger as far up as he can, although in some cases where the canal is long one can hardly be perfectly sure that he has reached the end of it. When the ligatures are tightened they draw up the mass which is held in the canal, and make, just at the internal ring, an exceedingly firm plug, which can be felt from the outside for a week or two after the operation, and which gradually subsides. This plug fills up the canal, except the lower portion, which is entirely open, and the dimple behind the peritoneum, where the constituents of the cord come out. Of course, there may be a dimple left at the inguinal ring; but, unless one opens the abdomen and operates from within, one cannot be sure that there is a projection instead of a dimple. The only difficulty is in getting the end of the sac pushed up and suturing it to the internal ring; otherwise it is a very simple operation, and the results have been so far satisfactory. He should be very glad to have it tried by other surgeons.

EXTENSIVE THORACOPLASTY BY SCHEDE'S METHOD.

DR. W. W. KEEN presented a man, aged thirty years, who was admitted to the Jefferson Hospital, March 11, 1894, with the history of a chronic thoracic empyema of twelve years' duration. When admitted, between the sixth and seventh ribs, just to the left of the nipple line, was a drainage-tube which he had worn continuously for nearly eleven years. About half an ounce of pus escaped from it in twenty-four hours. The whole left chest was much sunken in.

March 14, 1894, a vertical incision was made just outside the line of the nipple, and about two inches of the seventh and eighth ribs were resected, exposing the upper surface of the diaphragm. Starting from the opening in the chest cavity, it was with the greatest possible difficulty that Dr. Keen could resect the ribs, since they were absolutely in contact as the result of the deformity of his chest. The pleura was also over an inch in thickness, which made the thickness of the chest-wall about two inches, and therefore very rigid.

In addition to this the left lung was firmly bound down and so contracted that there was practically little lung-tissue in use. Hence, as his respiration was almost confined to the right lung, the ether had

to be watched very carefully, and by the time that he had resected these two ribs it was very evident that the operation should be terminated, and anything further left for a future date.

He left the hospital May 28, 1894, in much better health and with little annoyance from the large cavity remaining in the chest, from which the discharge was comparatively slight. He returned for a second operation June 30, 1894. Examination by a long probe showed that the cavity of the pleura was very large and extended to a level with the clavicle. A vertical incision was made from the clavicle to the still existing opening into the chest cavity, followed

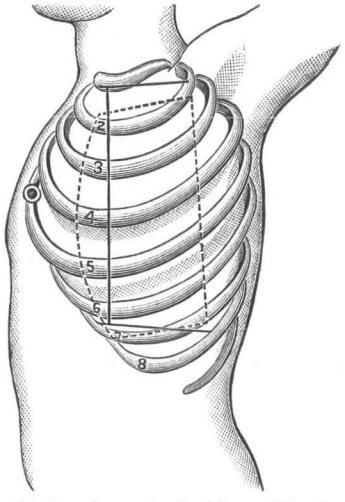

FIG. 3.—The solid line shows the incision. The dotted line shows the portion of the bony and muscular chest-wall removed. The posterior line should be farther back.

by two horizontal incisions at each end of the first. The soft parts were then dissected from the ribs internally to within an inch of the left border of the sternum, and externally to a point an inch posterior to the anterior border of the scapula. Then, by bone forceps, starting from the existing opening, ribs, muscles, pleura, vessels, and nerves —*i.e.*, the entire thickness of the chest-wall up to and including the second rib—were cut; then, starting again from the prior opening outwardly to a point a little in front of the inferior angle of the scapula skirting the upper surface of the diaphragm, then from this point directly upward, and again horizontally on a level with the second

rib. Most of this large mass, on account of its thickness, had to be removed piecemeal, part of it in two or three large pieces. The size of the portion removed was approximately eight inches vertically by five inches horizontally. The inner wall of the cavity was found to be enormously thickened visceral pleura and pericardium, stretching like a vertical diaphragm from front to back at a point about an inch external to the left border of the sternum. This was thoroughly curetted and swabbed. The flaps were then laid directly upon the thickened pleura and pericardium and sutured in place. His recovery was without incident, though slow. The reaction was very moderate.

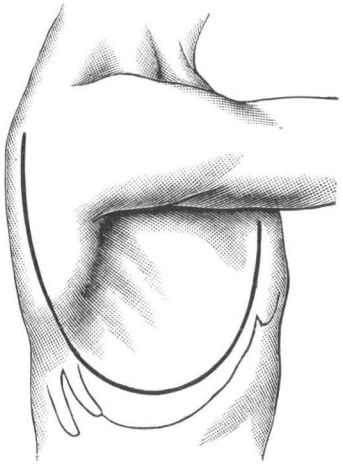

FIG. 4.—Schede's incision for thoracoplasty. (Esmarch.)

His chest is now very much deformed from falling in of the wall, but the cavity is entirely obliterated. His general health is excellent.

Dr. Keen remarked further that this was by far the most extensive resection of the wall of the thorax that he had ever done. The first operation was practically preliminary, simply to gain access to the cavity of the pleura, and had to be terminated somewhat abruptly on account of the difficulty of the etherization. The second operation was attended with less difficulty from the anæsthetic, and was fully carried out.

The operation which he made he had subsequently found had been described by Schede as a modification of Estlander's operation, or rather, perhaps, in suitable cases as a substitute for it. In the

present case Estlander's operation would have been useless, on account of the immensely thickened pleura.

Schede makes a large, semicircular flap (Fig. 4), with its base at the second rib, its curve beginning on the front of the thorax and sweeping downward and backward in a large curve which includes the larger part of one-half of the thorax. In Keen's case the soft parts were dissected from the ribs by a vertical incision with two horizontal incisions at the upper and lower ends of the first, making an [(Fig. 3). It seemed to be equally satisfactory with that of Schede.

The ease with which the operation was done, and the admirable result commend it very strongly. Nothing less radical would have effected a cure. The vessels were controlled without the slightest difficulty by hæmostatic forceps, not even a single one requiring ligation.

His condition (Fig. 5), eight months after the second operation, is curious. The thoracic wall, where its entire thickness has been removed, is as firm and resistant as if the ribs had never been removed. This may be due to two causes: First, the tension of the soft parts of the old chest-wall, which stretch like a drum-head from the anterior to the posterior border of the opening made; second, the thickened pleura and pericardium on the median surface of the old empyemic cavity, furnish a very firm, resistant base on which the flap presumably rests.

The posterior portion of the ribs forms a marked projecting ridge near the posterior axillary line. It looks as if the resections were much less extensive than described, but this is due to a lateral curvature of the spine to the left, thus making the spinal part of the ribs much more prominent than would otherwise be the case. The movements of the arm are perfectly free (Fig. 5), the removal of the greater part of both pectoral muscles having had no restraining effect upon this free shoulder motion.

The apex-beat of the heart is in the normal situation.

He has not gained in weight very much, but his general health is excellent.

NOTE.—A few days after this patient was shown to the Society the wound broke open again and discharged a small quantity of pus. By a third operation some more of the chest-wall at the upper posterior angle was removed. A cavity three and a half inches long and as thick as the thumb was found. This is now (March 27) nearly obliterated by granulation tissue.

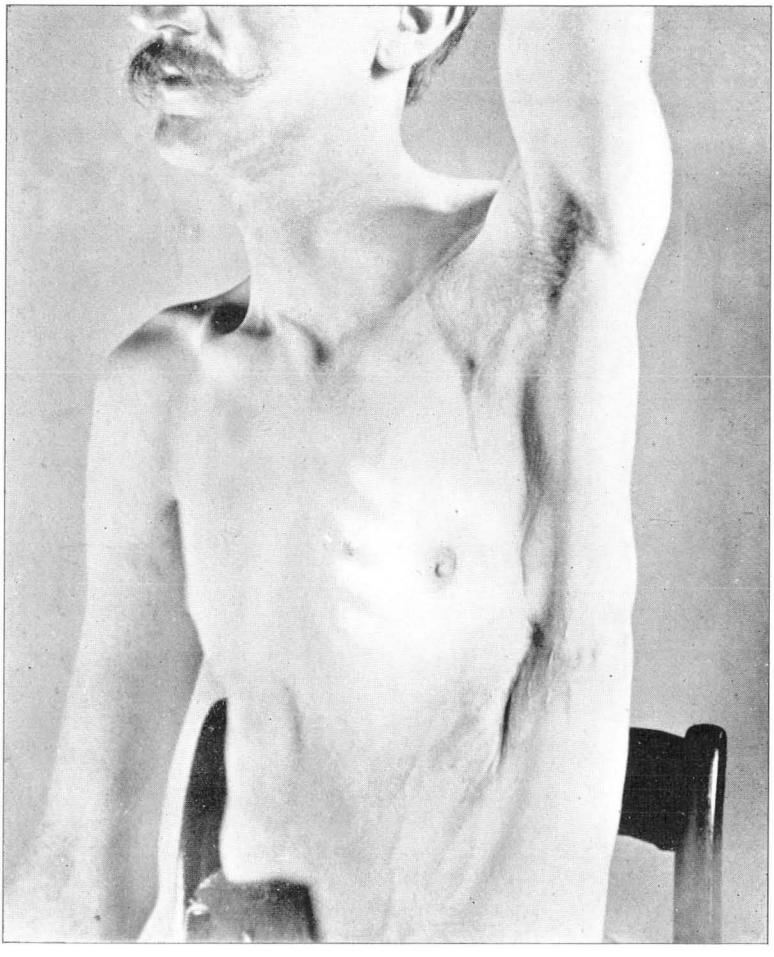

FIG. 5.—Result after thoracoplasty. Note the motility of the arm.
(Photographed by J. M. Bertolet.)

THE ADVANTAGES OF AMPUTATION THROUGH THE KNEE-JOINT AND THE AVOIDANCE OF THE TOURNIQUET WHEN THE VESSELS ARE ATHEROMATOUS.

DR. DE FOREST WILLARD called attention to the disadvantages of the use of the tourniquet when the vessels are atheromatous. The constriction causes not only minute fissures in the walls of the vessels, but it may even fracture them, and in either case it tends to develop arteritis, subsequent loss of vitality in the flaps, and secondary gangrene. At the same time the cases presenting this condition are frequently old and feeble persons who are seriously exhausted by the local condition of gangrene, presenting other evidences of obstructed vessels, and can illy afford any loss of blood.

Gangrene occurs most frequently in the feet and legs, and for such condition amputation in the neighborhood of the knee-joint, or at the thigh, is advisable since, after leg amputations, the diseased conditions frequently return.

Amputation through the knee-joint can be performed with less hæmorrhage than at any other portion of the limb, since, in the neighborhood of the knee, all the vessels in front are small and can be readily caught with hæmostats as the anterior skin-flap is cut. The tendo-patellæ, the lateral and posterior ligaments can all be divided without serious hæmorrhage. The limb hangs by the posterior bridge of soft tissues, which bridge contains the large vessels, and these can be easily caught by the fingers of an assistant; in fact, it is now a perfectly simple matter to expose the popliteal artery and to test its pulsation to discover whether it is actually pervious, then to expose it just enough to carry around it a bundle of catgut ligatures, four or five, which ligatures are tied just sufficiently tight to bring the inner coats of the vessels together and not to crush them.

Sometimes the popliteal artery will be found thoroughly plugged, necessitating the working up in the posterior flap for a considerable distance before a pervious vessel will be found.

The popliteal having been tied, the flap is firmly grasped to control the smaller arterial branches, and the posterior flap quickly cut off the desired length. The operation is practically bloodless.

Should the artery be impervious, it may necessitate an amputation higher than the joint itself. The tissues now can be pushed back, the periosteum divided above the condyles, and stripped back

from the femur to the desired distance without loss of blood and without injury to the soft tissues. The femur is then divided opposite the point of ligation and the wound dressed antiseptically.

By thus stripping back the tissues subperiosteally an amputation in the lower third of the thigh can be performed with but little loss of blood and without injury to the vessels by any form of constricting band. It is a plan equally well adapted to traumatic cases with atheromatous vessels.

The knee-joint region should then be the site of election. A broad ligature loosely tied is the best.

INJURIES OF THE LOWER EXTREMITIES REQUIRING AMPUTATION OF THE RIGHT LEG AND EXCISION OF THE LEFT OS CALCIS.

DR. H. R. WHARTON presented a man, aged fifty-eight years, who was admitted to the Methodist Hospital in April, 1894, with an extensive compound comminuted fracture of the bones of the right leg, and a lacerated wound of the sole of the left foot with extensive comminution of the os calcis and separation of the attachment of the tendo Achillis.

On the right side an amputation was made through the middle third of the leg, but upon examination of the left foot it was found that a flap consisting of part of the sole of the foot and heel, including the plantar fascia, could be turned forward, although the os calcis was extensively comminuted, and the tendo Achillis was torn loose from its attachment, and its extremity was torn into shreds.

Accordingly Dr. Wharton removed the os calcis completely, and having trimmed off the shreds from the tendo Achillis, sutured it to the posterior portion of the plantar fascia. It was noticed during the operation that all the arteries were very atheromatous.

The patient did well after the operation, and with the exception of a small patch of gangrene which occurred upon one of the flaps of the amputation, and some sloughing of part of the heel of the left foot, which delayed the healing of the wounds, his recovery was uneventful. He was now presented for the purpose of showing how useful a foot he has, even after excision of the os calcis. He walks fairly well; he has a fair range of flexion of the foot. The shoe he finds most satisfactory is one in which the inner portion over the heel is supplied with a triangular pad, to take the place of the prominence normally presented by the posterior portion of the os calcis.